

(FILE 'HOME' ENTERED AT 10:27:36 ON 07 DEC 2002)

FILE 'MEDLINE, BIOSIS, CAPLUS, EMBASE' ENTERED AT 10:27:48 ON 07 DEC 2002

L1 4663 S PIEZO  
L2 204935 S TRANSGENIC OR KNOCKOUT  
L3 24 S L1 AND L2  
L4 14 DUP REM L3 (10 DUPLICATES REMOVED)

L4 ANSWER 10 OF 14 MEDLINE

ACCESSION NUMBER: 2001307197 MEDLINE

DOCUMENT NUMBER: 21198341 PubMed ID: 11300685

TITLE: Application of the **piezo**-micromanipulator for injection of embryonic stem cells into mouse blastocysts.

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CORPORATE SOURCE: Pharmaceutical Technology Laboratory, Chugai Pharmaceutical Co., Ltd., 1-135, Komakado, Gotemba, Shizuoka 412-8513, Japan.

SOURCE: CONTEMPORARY TOPICS IN LABORATORY ANIMAL SCIENCE / AMERICAN ASSOCIATION FOR LABORATORY ANIMAL SCIENCE, (2001 Mar) 40 (2) 31-4.  
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AB Microinjection of embryonic stem (ES) cells into mouse blastocysts is one of the most important techniques for production of **knockout** or **transgenic** mice. However, skillful manipulation techniques and tremendous effort are required for this method. To overcome this difficulty, we applied a **piezo**-micromanipulator (PMM), which has been used for intracytoplasmic sperm injection in mice and production of cloned mice, for the injection of ES cells into blastocysts. When ES cells were injected by using a conventional method, 91% of the blastocysts were manipulated successfully. Using the PMM significantly ( $P < 0.01$ ) increased the success rate of ES injection to 97%. The number of embryos manipulated in an hour increased from 9.7 embryos with the conventional method to 27.0 embryos with the PMM method. The injected ES cells did not show any detrimental effects due to a pulse from the PMM. After embryo transfer of the manipulated blastocysts, 39% of the newborns were chimeric mice with the conventional method, whereas 42% of the neonates were chimeric after the PMM method. These results indicate that microinjection of the ES cells into blastocysts is more efficient by the PMM method than the conventional method.

*Indicates Piezo technique developed after filing date*

(FILE 'HOME' ENTERED AT 08:45:44 ON 07 DEC 2002)

FILE 'MEDLINE, BIOSIS, CAPLUS, EMBASE, CANCERLIT' ENTERED AT 08:45:58 ON  
07 DEC 2002

L1	8241 S XO
L2	19120 S TETRAPLOID
L3	28 S L1 AND L2
L4	13 DUP REM L3 (15 DUPLICATES REMOVED)

L Number	Hits	Search Text	DB	Time stamp
1	531	tetraploid	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:15
2	24101	transgenic	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:15
3	123	tetraploid and transgenic	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:15
4	169558	mouse	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:16
5	70	((tetraploid and transgenic) and mouse	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:16
6	20240	embryo	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:16
7	52	((tetraploid and transgenic) and mouse) and embryo	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:17
8	38	tetraploid with embryo	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:18
9	22	mouse and (tetraploid with embryo)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:25
10	5715	xo	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:25
11	7	tetraploid and xo	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/12/07 08:25